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L1: Entry 40 of 105 File: USPT Nov 10, 1998

DOCUMENT-IDENTIFIER: US 5834232 A
TITLE: Cross-linked gelatin gels and methods of making them

Detailed Description Text (14):
An exemplary protein for use in preparing a gel according to the present invention is gelatin. Gelatin is produced from collagen by acid (Type A) or alkaline (Type B) hydrolysis and thermal denaturation of the collagen fibers (Ross-Murphy, ibid.). With heating, the triple helix of the hydrolyzed collagen unfolds, and the protein becomes soluble. Cooling of the protein, now referred to as gelatin, causes a partial re-folding of the helix and results in a network of helical junctions. At a critical point determined by such factors as protein concentration, temperature, and ionic strength of the solvent, the network is extensive enough to form a gel. These gels are thermoreversible gels, and their properties have been extensively studied. See Michon et al. (ibid.) and references cited therein.

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L6: Entry 6 of 7 File: USPT Aug 31, 1982

DOCUMENT-IDENTIFIER: US 4347234 A
TITLE: Medicinally useful, shaped mass of collagen resorbable in the body

Abstract Text (1):
A shaped mass resorbable in the body, comprises collagen and a bioresorbable binding agent for collagen, the binding agent being selected, e.g., from polymers of C.sub.2-16 .alpha.-hydroxyalkanoic acids, polymers of natural amino acids, hydrolyzed collagen or hydrolyzed elastin.

Brief Summary Text (3):
It is known to introduce into the body bioresorbable materials, such as collagen, in freeze-dried or foamed form and thus to fill up, e.g., bone or tissue defects. Such implants can be used to stop bleeding and can also be employed for the induction of granulation tissue; however, they have the disadvantage that they are relatively loosely constructed and, therefore, upon moisture take-up, lose their shape relatively quickly. Thus, the body tissues scarcely have time to grow again to a sufficient extent. Therefore, it is desirable to develop similar materials which display the advantages of the known collagen preparations, but simultaneously have a more stable consistency and, therefore, lose their shape less quickly.

Brief Summary Text (20):
If an active material is present in the composition of this invention, after its implantation into the body, it is, surprisingly, very favorably liberated. Whereas liberation from conventional (e.g., lyophilized) collagen takes place relatively quickly, the active material can be liberated protractedly from the composition of this invention, i.e., over a desired period of time, in the necessary concentrations. The active material is thereby continuously and slowly given off without cell-damaging side effects caused by the implant. In vitro experiments with the preferred compositions of this invention which, as binding agent, contain a copolymer of lactide and glycolide units and, as active material, gentamycin sulphate, have, e.g., shown that the antibiotic is liberated in initially very high, then slowly decreasing concentrations. The amount of the antibiotic liberated and the period of time of the liberation can be controlled by variation of the proportions of the components and of the working-up conditions employed in the production of the composition. The process conditions to be employed are well known to the expert and the desired properties of the process end products can be tested by standard methods.

Brief Summary Text (29):
Especially preferred are compositions of about 90-96 wt % of collagen and about 10-4 wt % of hydrolyzed collagen (protein powder with a molecular weight of about 3000) which, under certain conditions, can already be shaped at temperatures of 80.degree.-100.degree. C.

Brief Summary Text (41):
The temperatures--depending upon the heat stability of the active material and/or of the binding agent--can thereby be varied over a wide range, e.g., from room temperature to 200.degree. C. If the binding agent consists, e.g., of copolymers of glycolic acid and lactic acid units, temperatures of about 130.degree. to 170.degree. C. are preferred. If, on the other hand, a proteinaceous material, e.g., of hydrolyzed collagen, is employed as binding agent, then lower temperatures, e.g., 40.degree.-90.degree. C., preferably 60.degree.-85.degree. C., are advantageous but,

of course, higher temperatures can be employed if necessary for technical reasons.

Brief Summary Text (48):
Advantageously, in the case of this embodiment, the composition of this invention generally needs only to be applied a single time since it is fully resorbed in the course of time. Therefore, it is no longer necessary to remove the implant after the healing of the wound.

Brief Summary Text (49):
A further field of use for the antibiotic-containing compositions of this invention is in bone surgery, especially the treatment of post-traumatic osteomyelitis. The new agent is very well suited--especially when containing calcium phosphate and particularly tricalcium phosphate--for the filling up of osteomyelitic holes. Simultaneously with the gradual resorption of the implant of this invention, the newly forming tissue will be grown into it, whereby there results a healing process as in an aseptic medium.

Detailed Description Text (13):
A mixture of 475 g of collagen, 25 g of a hydrolyzed water-soluble collagen (protein powder) with an average molecular weight of about 3000 and 10 g of gentamycin sulphate is pressed analogously to Example 1, but at 86.degree. C. to give spheroids with a diameter of about 7 mm. The spheroids contain 93 wt % of collagen, 5 wt % of hydrolyzed collagen (protein powder) and 2 wt % of gentamycin sulphate.

CLAIMS:

1. A collagen based drug delivery system which is resorbable in the body, is sterilized and has been compacted into the shape of a tablet, spheroid, foil, pipe, plate, fiber, granule, strand or tube implantable into the body, by the application of heat of a temperature of 40.degree.-200.degree. C., optionally also with application of pressure of 300-1200 bar, with extrusion, with injection molding or with sintering and which, upon administration to the body, essentially maintains its shape and effects a retarded liberation of the drug, comprising 0.2-20 weight percent of a pharmacologically active drug material, 1-25 weight percent of a bioresorbable binding agent for collagen, and the balance being finely ground collagen, the binding agent consisting essentially of a co- or homopolymer of natural amino acids or of hydrolyzed collagen or hydrolyzed elastin.

3. The resorbable drug delivery system of claim 1, wherein the binding agent is a hydrolyzed collagen or hydrolyzed elastin of a molecular weight of about 2500-4000.

End of Result Set

L6: Entry 7 of 7 File: USPT Sep 22, 1981

DOCUMENT-IDENTIFIER: US 4291013 A
TITLE: Medicinally useful, shaped mass of collagen resorbable in the body

Abstract Text (1):
A shaped mass resorbable in the body, comprises collagen and a bioresorbable binding agent for collagen, the binding agent being selected, e.g., from polymers of C.sub.2-16 .alpha.-hydroxyalkanoic acids, polymers of natural amino acids, hydrolyzed collagen or hydrolyzed elastin.

Brief Summary Text (3):
It is known to introduce into the body bioresorbable materials, such as collagen, in freeze-dried or foamed form and thus to fill up, e.g., bone or tissue defects. Such implants can be used to stop bleeding and can also be employed for the induction of granulation tissue; however, they have the disadvantage that they are relatively loosely constructed and, therefore, upon moisture take-up, lose their shape relatively quickly. Thus, the body tissues scarcely have time to grow again to a sufficient extent. Therefore, it is desirable to develop similar materials which display the advantages of the known collagen preparations, but simultaneously have a more stable consistency and, therefore, lose their shape less quickly.

Brief Summary Text (20):
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Brief Summary Text (29):
Especially preferred are compositions of about 90-96 wt % of collagen and about 10-4 wt % of hydrolyzed collagen (protein powder with a molecular weight of about 3000) which, under certain conditions, can already be shaped at temperatures of 80.degree.-100.degree. C.

Brief Summary Text (41):
The temperatures--depending upon the heat stability of the active material and/or of the binding agent--can thereby be varied over a wide range, e.g., from room temperature to 200.degree. C. If the binding agent consists, e.g., of copolymers of glycolic acid and lactic acid units, temperatures of about 130.degree. to 170.degree. C. are preferred. If, on the other hand, a proteinaceous material, e.g., of hydrolyzed collagen, is employed as binding agent, then lower temperatures, e.g.,

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Advantageously, in the case of this embodiment, the composition of this invention generally needs only to be applied a single time since it is fully resorbed in the course of time. Therefore, it is no longer necessary to remove the implant after the healing of the wound.

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